

Unmanned Weapons Systems:  
The Future of MAGTF operations

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to  
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Throughout history, weapons technology has shaped the conduct and outcome of warfare. Advancements in military technology and the techniques which accompany them have given combat forces possessing superior weapons a marked advantage over their opponents in battle. The 20<sup>th</sup> century has seen the emergence of semi-conductors, computers, robotics, and the information systems to connect and control these technologies. This technological boom has enabled information to be collected, transmitted, and received instantaneously anywhere on Earth.

Military commanders seeking an advantage have leveraged these innovations to collect, communicate, and share information which supports military operations. Some innovations were adapted to perform reconnaissance and surveillance (R&S) missions for the military, such as remote ground sensors, and unmanned aerial vehicles (UAV's). Further refinements have made these systems more capable and increasingly automated. Advancements in these technologies have resulted in the military's expanded use of these systems. The success of these modern systems, employed during recent operations, has laid the foundation for weaponized versions, which not only provide information, surveillance, and reconnaissance (ISR), but are also capable of delivering ordnance.<sup>1</sup> The Marine Corps must exploit the advancements in current and future unmanned weapons systems to expand the MAGTF's operational reach, mitigate risks

to human life, and increase the MAGTF's ability to conduct operations across the entire spectrum of warfare.

**Extend operational reach and increase combat power**

Use of unmanned weapons systems (UWS) will extend the MAGTF's operational reach by increasing the commander's ability to observe and influence operations within his battlespace. Unmanned weapons systems facilitate this ability by providing greater endurance.<sup>2</sup> The commanding officer of the Air Force's 432<sup>nd</sup> Air Expeditionary Wing, Colonel Chris Chambliss validates this assumption in his interview with National Defense,

while flying in his F-16 two years ago, he might have had only 10 minutes worth of fuel to find a target put the laser on it and hit it... [T]oday, Predators that have been in the air for hours or even days can point a more accurate laser on the target and allow the fighters to hit them in even less time.<sup>3</sup>

To Marines on the ground, support from a UWS, like Predator, means they will have the close air support needed to accomplish their mission for a longer period of time, while providing ISR to improve situational awareness and support their decision making.

In addition to the tactical benefits provided by unmanned aerial weapons systems, unmanned ground weapons systems can provide virtually continuous ISR, cueing, and fire support to

ground combat elements. Benefits which are supported by Rand D. LeBouvier in his June 2004 Proceedings article,

Having a persistent view of the battle space provides the operational commander with excellent situational awareness, allowing him to observe trends and patterns. Knowing how the enemy is arrayed and deployed eliminates some of the uncertainty of operations.<sup>4</sup>

The increased situational awareness, and lethality which UWS's provide, would enhance the MAGTF commander's operational capabilities by giving him the ability to both observe enemy actions, and counter their actions with fires.

While providing a more persistent presence on the battlefield, unmanned weapons systems would increase the MAGTF's combat power by enabling the MAGTF to accomplish its tasks more efficiently. This is made possible in several ways. First, information collected by UWS's would enable the MAGTF commander to more effectively task organize his or her forces to meet enemy threats. As a result, Marine forces will be positioned in the right place, at the right time, with the right combat power to accomplish missions. Second, unmanned weapons systems should augment the force protection and security of MAGTF elements, allowing commanders to re-task Marines who once provided that security. Using Unmanned Weapons Systems to provide security will enable Marines who once stood this duty to perform other roles. This redistribution of forces will increase the MAGTF

commander's combat power and allow him to accomplish other tasks within their area of operations (AO).

Effective use of MAGTF assets and persistence of unmanned air and ground weapons systems will extend the MAGTF commander's operational reach in his or her AO. The best example of this is the difference between manned and unmanned aerial systems. Unmanned aerial weapons systems have a greater endurance than their manned counterpart. Because of this, UWS's require fewer aircraft to support the same tasking. In addition, as the capabilities and sorties flown by unmanned aerial weapons systems are combined with those of manned aircraft, the MAGTF commander's combat influence will significantly increase over his area of operations (AO).

#### **Reduce risks to Marines**

Risk is inherent in conducting combat operations. Although the threat to Marines cannot be eliminated, the Marine Corps must maximize the use of UWS's to mitigate it. One way in which unmanned weapons systems have minimized risks to Marines in combat is by reducing their exposure to enemy threats. According to Henry Kenyon author of U.S. Robots surge onto the battlefield, "Unmanned ground systems have become a vital tool for warfighters operating in southwest Asia....these platforms have saved many lives by replacing soldiers in dangerous jobs,

including disposal and reconnaissance."<sup>5</sup> Using unmanned weapons systems to conduct operations where the risk to human life is grave and unnecessary is essential to protecting Marines while conducting operations.

Today, numerous systems are currently in use or in development to provide warfighters with an edge on the battlefield. Henry Kenyon notes that, "One robotic system now being readied for deployment is the Throwbot, a tactical robot that can be tossed into doorways and windows. The small, cylindrical robot is about the size of a soda can, has two wheels and a video camera, and weighs less than half a pound."<sup>6</sup> The device can be used to assist Marines in clearing buildings or other confined areas in an urban environment by providing essential information on enemy disposition prior to the assault. Other systems written about by Henry Kenyon, "range from man portable tactical robots-such as I-Robot's Packbot, the Talon explosive ordnance system, and the Marine Corps' Dragon Runner-to six-ton mine clearance systems."<sup>7</sup> Each of these systems reduces the risk by limiting exposure to deadly situations.

As technology builds upon the success of these vehicles, weaponized versions will provide even greater capabilities. In 2008, the Marine Corps continued its work with Carnegie Mellon University on a six-wheeled robot called Gladiator. In his article Henry Kenyon claims it can be used, "in a variety of

scout and support rolls" and according to him it is "intended for combat missions and can be outfitted with machine guns and grenade launchers. This is the first armed robot to be fielded to soldiers."<sup>8</sup> This event is a landmark for the employment of unmanned systems. The use of these multiple unmanned systems would provide the commander with information on and cueing of enemy threats which will greatly enhance the force protection of Marines.

**Increase MAGTF ability across the spectrum of warfare.**

The Marine Corps prides its self on being "the most prepared when our nation is least ready." However, its ability to conduct combat operations across the spectrum of conflict has been reduced due to operational commitments. Increased deployment cycles have decreased training time for nearly all Marine units. As a result, units have focused their training on specific tasks for current operations, rather than preparing them to conduct naval expeditionary operations. Use of UWS's in support of operations would decrease the number of Marines required to support these conflicts. This will provide Marine units the ability to increase training currently not being conducted. As a result, deploying units will be better prepared to conduct naval expeditionary missions across a broad spectrum of warfare consistent with doctrine.

Proponents of unmanned vehicles on today's battlefield such as Rand LeBouvier argue that they are, "best applied in situations where it is dirty (contaminated), dangerous (within an enemy's engagement envelope), or dull (long dwell, routine, repetitive)."<sup>9</sup> While their capabilities are not limited to these areas, unmanned vehicles can provide substantial assistance as conflicts draw down and the fighting becomes less intense. The versatility and endurance of these assets would allow Marine units to operate more efficiently, resulting in a decreased requirement to the overall Marine force.

Marine aviation in particular, would benefit from the use of unmanned weapons systems during conflicts such as the current operating environment in Iraq. In this environment unmanned systems are ideal because they are able to provide increased ISR and close air support (CAS) sorties. In addition Rand LeBouvier asserts that, "the combination of sensor and shooter in one package decreases the time required to engage."<sup>10</sup> The end result will be increased situational awareness between the forward air controller and supporting aircraft. This arrangement also provides additional CAS and ISR support to the GCE while reducing the burden on Marine tactical aircraft (TACAIR).

Unmanned weapons systems would also extend the life of current airframes and increase pilot preparedness to conduct operations against formidable enemies. UWS's would enable Marine

TACAIR to increase training by reducing the MAGTF's dependence on these assets for ISR and CAS. This reduction of TACAIR sorties would increase the lifespan of airframes by reducing the number of hours being flown on these aircraft. In addition to the decrease in total flight hours, units will have additional training time to prepare for higher level threats, thus better equipping Marine air to support operations across the spectrum of war.

### **Counterargument**

Opponents of unmanned weapons systems claim that the nation and its defenses are becoming over reliant on technology, that the systems provide us with too much information, and that its users are at risk of becoming a slave to these systems. However, these machines are simply tools used to accomplish a specific task, and if used properly these tools can provide precise, accurate, and relevant information to the operator. The end result is enhanced combat effectiveness.

Others argue that these systems are vulnerable to jamming, manipulation, or control by hostile forces, which can therefore be dangerous to friendly units. However, the Department of Defense (DoD) has issued guidance to prevent such a scenario from occurring. According to an article written by Sandra Erwin in National Defense, the DoD's safety policy mitigates these

vulnerabilities by requiring all unmanned systems to confirm transmissions sent prior to the employment of ordnance. She states that "to prevent the inadvertent firing of weapons, the policy instructs that unmanned systems be designed so that more than a single command is required to fire a weapon or abort the mission."<sup>11</sup> Furthermore, these safety regulations "require a minimum of two independent and unique validated messages in the proper sequence."<sup>12</sup>

### **Conclusion**

While the nature of warfare is enduring, the way in which armies achieve their objectives will continue to change. The use of unmanned weapons systems will provide the MAGTF an enormous opportunity to increase its ability to project power, protect Marines, and enable the Marine Corps to prepare for the future conflicts across the entire spectrum of warfare. The use of unmanned weapons systems will enable the MAGTF to achieve this, by leveraging the capabilities of these systems to allow more efficient use of Marine assets.



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## Notes

<sup>1</sup> Grace V Jean. "Reaper Drones Accomplishing Traditional Fighter Jet Missions." *National Defense*. Arlington: Aug 2008. Vol 93, Iss 657, 34-35.

<sup>2</sup> Rand D LeBouvier. "Unmanned Systems Extend Operational Reach." *United States Naval Institute. Proceedings*. Annapolis: Jun 2004. Vol. 130, Iss.6; 36.

<sup>3</sup> Grace V Jean. "Reaper Drones Accomplishing Traditional Fighter Jet Missions." 35.

<sup>4</sup> Rand D LeBouvier. "Unmanned Systems Extend Operational Reach." 36.

<sup>5</sup> Kenyon S Henry. "U.S. Robots Surge Onto The Battlefield." *Signal*. Fairfax: Mar 2008. Vol.62, Iss.7, 45.

<sup>6</sup> Kenyon S Henry. "U.S. Robots Surge Onto The Battlefield." 46.

<sup>7</sup> Kenyon S Henry. "U.S. Robots Surge Onto The Battlefield." 46.

<sup>8</sup> Kenyon S Henry. "U.S. Robots Surge Onto The Battlefield." 46.

<sup>9</sup> Rand D LeBouvier. "Unmanned Systems Extend Operational Reach." 37.

<sup>10</sup> Rand D LeBouvier. "Unmanned Systems Extend Operational Reach." 37.

<sup>11</sup> Erwin I Sandra, "No Accidents: Pentagon publishes new safety guidelines for unmanned vehicles." 17.

<sup>12</sup> Erwin I Sandra, "No Accidents: Pentagon publishes new safety guidelines for unmanned vehicles." 17.

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